$^{12}C(^{30}Si,npγ)$ 2012So19

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 140, 1 (2017)	30-Sep-2015

2012So19: E=64 MeV ^{30}Si beam was provided by the tandem accelerator at Istituto Nazionale di Fisica Nucleare (INFN), Laboratori Nazionali di Legnaro (LNL) in Italy. Target was 200 μg/cm^2 ^{12}C. γ rays were detected by one triple cluster detector of the AGATA array. Measured Eγ, Iγ, $\gamma\gamma$-coin. Deduced levels, J ,π, γ-ray branching ratios, configurations. Comparison with shell-model calculations.

All data are from 2012So19.

^{40}K Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0	4^-	3353.9 *3*	(6^+)	4876.1 *3*	9^+	7033.5 *5*	(9^-)
891.76 *20*	5^-	3872.8 *3*	(7^+)	5333.4 *4*	(9^+)	7472.5 *4*	$(9^-,11^-)$
2543.26 *24*	7^+	4366.3 *3*	(8^+)	5892.4 *3*	(9^-)	7748.6 *5*	$(9^-,10^-)$
2879.6 *3*	6^+	4812.5 *4*	(8^+)	6227.7 *4*	$(10)^-$	7994.8 *6*	$(9^-$ to $12^-)$

† From least-squares fit to γ-ray energies.

‡ Values in parenthesis are tentative assignments in 2012So19 based on comparison of the measured branching ratios with Weisskopf estimates and others are from Adopted Levels.

$\gamma(^{40}K)$

Eγ	Iγ	Ei(level)	J_i^π	E_f	J_f^π	Comments
336.25 *20*	7.2 *13*	2879.6	6^+	2543.26	7^+	
509.90 *20*	3.8 *7*	4876.1	9^+	4366.3	(8^+)	
518.97 *26*	0.23 *6*	3872.8	(7^+)	3353.9	(6^+)	
559.28 *22*	0.57 *10*	5892.4	(9^-)	5333.4	(9^+)	
810.79† *24*	1.75 *32*	3353.9	(6^+)	2543.26	7^+	
891.74 *22*	100 *18*	891.76	5^-	0.0	4^-	
939.28† *23*	5.7 *10*	4812.5	(8^+)	3872.8	(7^+)	
993.1 *4*	0.31 *6*	3872.8	(7^+)	2879.6	6^+	
1016.6 *4*	0.44 *8*	5892.4	(9^-)	4876.1	9^+	
1079.1 *5*	0.69 *13*	5892.4	(9^-)	4812.5	(8^+)	
1142.3 *5*	0.59 *11*	7033.5	(9^-)	5892.4	(9^-)	
1245.10 *31*	1.12 *21*	7472.5	$(9^-,11^-)$	6227.7	$(10)^-$	
1329.00 *26*	3.3 *6*	3872.8	(7^+)	2543.26	7^+	
1351.70 *21*	7.3 *13*	6227.7	$(10)^-$	4876.1	9^+	
1486.90 *34*	0.91‡ *17*	4366.3	(8^+)	2879.6	6^+	I_γ: using Iγ(1487)/Ig(1823)=19 *6*/100 *6* from Adopted Gammas.
1520.88 *30*	0.42 *9*	7748.6	$(9^-,10^-)$	6227.7	$(10)^-$	
1525.85† *27*	0.91 *18*	5892.4	(9^-)	4366.3	(8^+)	
1579.3 *5*	0.41 *9*	7472.5	$(9^-,11^-)$	5892.4	(9^-)	according to e-mail reply of Jan 5, 2013 from P.A. Soderstrom, Iγ(1245)/Iγ(1579)=21 *5*/100 *26* in column 4 of 2012So19 should instead be 100 *28*/36 *11*.
1651.34 *24*	61‡ *11*	2543.26	7^+	891.76	5^-	
1767.1 *5*	0.60 *11*	7994.8	$(9^-$ to $12^-)$	6227.7	$(10)^-$	
1822.83 *21*	13.3‡ *24*	4366.3	(8^+)	2543.26	7^+	
1988.07 *35*	3.3 *6*	2879.6	6^+	891.76	5^-	
2219.7 *5*	1.00 *18*	7033.5	(9^-)	4812.5	(8^+)	
2269.0† *5*	4.1 *8*	4812.5	(8^+)	2543.26	7^+	
2332.89 *22*	10.2 *19*	4876.1	9^+	2543.26	7^+	

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^{12}C(^{30}Si,npγ) 2012So19 (continued)

$\gamma(^{40}K)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
2461.3 *11*	0.93 *17*	3353.9	(6^+)	891.76	5^-		I_γ: from e-mail reply of Jan 5, 2013 from P.A. Soderstrom; 0.53 *17* quoted in Table I of 2012So19 is a misprint.
2543.2 *4*	4.5‡ *5*	2543.26	7^+	0.0	4^-	[E3]	Iγ(2543)/Iγ(1651)=12.6 *5*/100.0 *23* (value of 100 *23* quoted in 2012So19 is a misprint, it should be 100.0 *23*, as in Adopted Gammas.
2790.53 *29*	5.4 *10*	5333.4	(9^+)	2543.26	7^+		
2872.9 *9*	1.42 *26*	7748.6	$(9^-,10^-)$	4876.1	9^+		

† This γ was reported in 1977Eg01 in ^{26}Mg(^{16}O,pnγ) but not placed.

‡ Relative γ-ray branching ratios adopted by 2012So19 from Adopted Gammas. Due to strong coincidences with ^{38}Ar transitions, intensity of this γ could not be measured accurately in 2012So19.

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Level Scheme

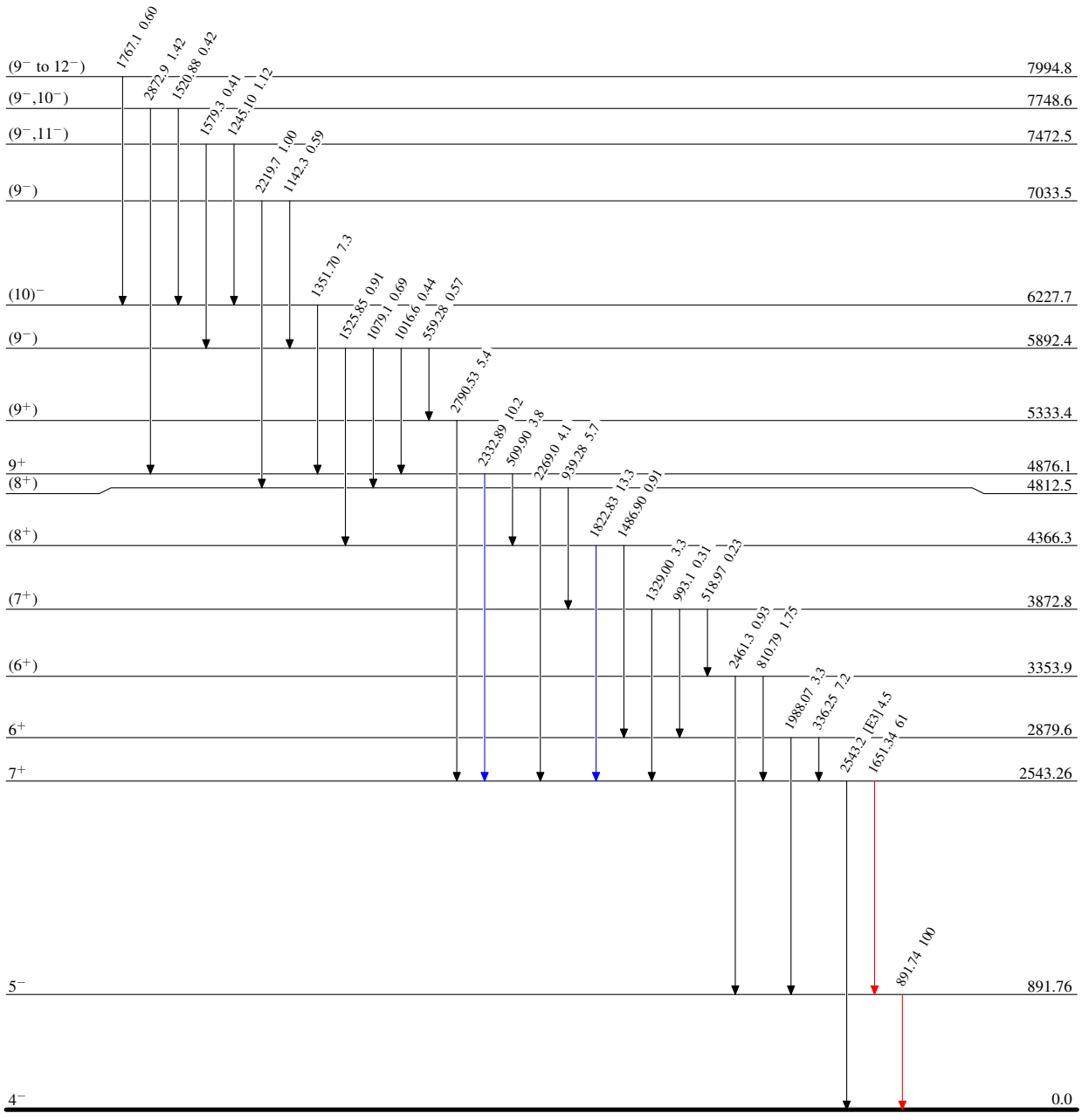
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{40}_{19}K_{21}$